

ABSTRACT OF THE DISCLOSURE

RecA protein mutants and RecA homolog protein mutants which contain one or more mutations in the MAW motif are presented. The mutants rely on replacement of wildtype amino acid residues in the MAW motif with specific replacement residues to alter the three-dimensional structure of the MAW motif and to change the protein's DNA-binding properties. Three classes of mutants are described: mutants which will reduce the protein's dependence on ATP to initiate DNA-binding; mutants which more tightly bind DNA; and combination mutants which possess both of these properties.